

It is irrelevant what market share any particular service provider had in past submarkets, since those segments are now submerged in the larger wireless market. These services are now substitutes for each other in the eyes of providers and consumers.

Racotek's 1993 Annual S.E.C. 10-K Report observed that:

The Company believes that seven to nine million of the estimated 38 million mobile workers in the United States are in field service and transportation industries that involve regular use of vehicles and that those workers are the principal potential market for Racotek's mobile data transmission services. However, the market for mobile data services is new and undeveloped. Mobile workers who currently have wireless communications facilities communicate using private dispatch radio, paging systems, private data systems on dedicated frequencies, cellular telephone and SMR voice services. A number of mobile workers have no wireless communications facilities at the present time.<sup>91</sup>

#### **Market Share in the Wireless Marketplace**

As Drs. Besen and Burnett observed in their antitrust analysis of the mobile telecommunications marketplace, the effective capacity of providers in the wireless marketplace is the appropriate measure of market share.

The study concluded that:

- ◆ Market definition from the perspective of technology is too narrow -- as technologies converge, it is no longer appropriate to think of openly competing services as distinct products in distinct markets.
- ◆ For firms operating in multiple areas, Basic Trading Areas are not relevant geographic markets for antitrust purposes as long as companies are not able to discriminate on the basis of price among different geographic areas.

Using the Department of Justice's and Federal Trade Commission's Horizontal Merger Guidelines, Drs. Besen and Burnett found that: **"Even in the most highly concentrated market structure possible under pending PCS rules, the Merger Guidelines would not bar, and might not even warrant investigation of, significant acquisitions of capacity by incumbent cellular operators."**<sup>92</sup>

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<sup>91</sup>*Racotek Annual 10-K Report* at p.2.

<sup>92</sup>Drs. Besen and Burnett, *op cit.* at p.4.

The Merger Guidelines use the Herfindahl-Hirschman Index (HHI) to measure market concentration, based on summing the squares of the individual market shares of all of the market participants. Thus, in a market with 10 firms, each with a market share of 10 percent, the HHI would be 1000. A market composed of seven firms, with two firms having shares of 25 percent each and the remaining firms having shares of 10 percent each, would have an HHI of 1750. (Each firm with 25 percent contributes 625 ( $25^2 = 625$ ), and each firm with 10 percent contributes 100, hence  $625 + 625 + 5(100) = 1750$ .) In unconcentrated and moderately-concentrated markets HHI increases of 100 points are necessary before competitive concerns may be raised, and in highly-concentrated markets HHI increases of 50 points are necessary before competitive concerns are raised.

The Merger Guidelines generally conclude that post-merger measures of HHI below 1000 indicate an unconcentrated market, with adverse competitive effects being unlikely. Post-merger HHIs between 1000 and 1800 indicate moderate concentration. Mergers producing HHI increases of less than 100 are unlikely to have adverse competitive effects. Neither of the foregoing examples would require further analysis under the guidelines. Mergers producing increases of more than 100 points may raise competitive concerns, depending on other conditions.

Post-merger HHIs of above 1800 indicate that a market is highly concentrated, although mergers producing an increase in the HHI of less than 50 points are unlikely to have adverse competitive effects. Mergers producing increases of more than 50 points may raise competitive concerns, depending on other conditions. Mergers producing increases in the HHI of more than 100 points are presumed to enhance market power or its exercise, although the presumption may be

overcome by other factors making such exercise unlikely.

Drs. Besen and Burnett calculated the HHIs for the mobile telecommunications marketplace under scenarios in which cellular companies do not acquire additional MHz, as well as ones in which they acquire 10 MHz or 15 MHz. The scenarios also included entry by SMRs. While the scenarios were based upon both the Commission's original and CTIA's proposed licensing schemes, and not the revised plan which allocated 30 MHz to a BTA license, the results are still indicative of an unconcentrated market.

The basis of these calculations is the *effective capacity* of the spectrum available for mobile telecommunications service. While the 170 MHz of bandwidth available for PCS and cellular (120 MHz and 50 MHz, respectively) *could* be used to produce measures of potential market share, a simple measure of bandwidth is not a meaningful measure of the power any individual firm has in the wireless market.

Although each cellular provider does have 25 MHz of spectrum in the markets in which it operates, FCC rules require cellular operators to accommodate their current analog customers. Because cellular carriers will therefore be unable to convert all their spectrum to digital, their spectrum has less *effective capacity* than spectrum that can be used exclusively to provide more spectrum-efficient digital services.<sup>93</sup>

However, even under the Commission's revised allocation plan, and with one SMR in the marketplace (with 10 MHz of spectrum), the following chart shows that the effective capacity of cellular companies would be only 16.33 percent -- far below the 35 percent market share the Merger Guidelines consider the threshold for antitrust inspection.<sup>94</sup>

### Merger Guidelines - HHI Index Example

If two celcos each had 10 MHz of PCS spectrum, and one SMR has a total of 10 MHz of spectrum, the HHI index indicates that the resulting market concentration would be moderate.

<u>Firms</u>	<u>Bandwidth</u>	<u>Capacity</u>	<u>Share (%)</u>	<u>HHI</u>
Celco1	35	160	16.33	266.67
Celco2	35	160	16.33	266.67
PCS-A	30	180	18.37	337.46
PCS-B	30	180	18.37	337.46
PCS-C	30	180	18.37	337.46
PCS-D	10	60	6.12	37.43
SMR-1	10	60	6.12	37.43
Total	180	980	100	1620.58

Assumptions: That the celcos maintain 10 MHz of bandwidth to serve analog cellular customers, and that digital enjoys a 6-to-1 capacity relationship with analog.

<sup>93</sup>The precise advantage of digital over analog depends in part on the technology involved, and increases in capacity may range from a multiple of 2 to 18. The study relied upon a multiple of 6, and assumed 10 MHz of a cellular operator's bandwidth would remain devoted to analog customers. Besen and Burnett Study at p.37.

<sup>94</sup>The calculations assumed that each firm served all customers within the geographic market.

In fact, as there is more than 10 MHz of SMR spectrum available, and more than one SMR carrier per market, the market concentration may be even less than projected above. For example, if there are four SMR providers in the marketplace, sharing 21 MHz of spectrum, a cellular/PCS company would have 15.3 percent of the market's effective capacity.

### **Merger Guidelines - HHI Index Example**

If two celcos each had 10 MHz of PCS spectrum, and four SMRs have a total of 21 MHz of spectrum, the HHI index indicates that the resulting market concentration would be moderate.

<u>Firms</u>	<u>Bandwidth</u>	<u>Capacity</u>	<u>Share (%)</u>	<u>HHI</u>
Celco1	35	160	15.3	234.1
Celco2	35	160	15.3	234.1
PCS-A	30	180	17.2	295.8
PCS-B	30	180	17.2	295.8
PCS-C	30	180	17.2	295.8
PCS-D	10	60	5.7	32.5
SMR-1	10	60	5.7	32.5
SMR-2	4	24	2.3	5.3
SMR-3	5	30	2.9	8.4
SMR-4	2	12	1.1	1.2
Total	180	1046	100	1435.5

Assumptions: That the celcos maintain 10 MHz of bandwidth to serve analog cellular customers, and that digital enjoys a 6-to-1 capacity relationship with analog.

Taking factors other than market concentration into account when considering the competitiveness of the wireless telecommunications market still suggests that the market would continue to function competitively. As the preceding sections indicate, it would be difficult for companies to raise prices anti-competitively because of the rapidly changing nature of wireless services. Similarly, as technologies converge and once-distinct technologies enter into direct competition with other services, the market will only become more competitive with new providers and new services entering all the time.

And as the antitrust analysis demonstrates, the shares possessed by cellular companies -- even after any hypothetical acquisition of PCS spectrum -- fall below the market share threshold for concern under the Department of Justice's Merger Guidelines.

## Conclusion

Summing it all up, as Peter Bernstein, Vice President of Research at Probe Research and Editor of *Wireless for the Corporate User*, has stated: ***"I don't believe there is a purchaser of communications services who believes there isn't a choice in wireless."***<sup>95</sup>

In fact, the information submitted by such petitioners as the Louisiana Public Service Commission does not testify to any significant number of customer complaints, compared to the total volume of cellular subscribers. Indeed, the activities which the Louisiana P.S.C. claims it performs on behalf of consumers appear to have resulted in (1) the imposition of higher charges upon consumers, and (2) the reduction of competition through the exclusion of potential service providers.<sup>96</sup>

Likewise, such actions as the prohibition of service and equipment packaging (which the Commission, the Department of Justice, and the Staff of the Federal Trade Commission all concluded was pro-competitive and beneficial to consumers), hardly testify to the advantages state regulation renders consumers. Consumers appear to pay both higher service rates and higher equipment rates as a result of such state action.

It is ironic that some states have advanced the proposition that the consumer is or will be helped by the reduction of choice (among carriers, as well as among rate plans) through tariff and entry regulations. Regimes have been suggested which are inconsistent with a competitive marketplace, threatening to limit entry, delay technological progress and disrupt service innovation.

The Commission should reject these proposals, and instead recognize and foster wireless competition by preempting state regulation of the Commercial Mobile Radio Services.

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<sup>95</sup>Jamie Wexler, "AT&T/McCaw Restrictions a Mere Formality," *Network World*, July 25, 1994, at p.33.

<sup>96</sup>See e.g., Petition on Behalf of the Louisiana P.S.C., filed August 9, 1994, at pp.15-16 (rate plan applications) and pp.20-21, 32 (exclusion of companies from operating in Louisiana).

Congress and the Commission have acted to ensure the establishment of a competitive telecommunications environment, by allocating new resources to the industry and mandating regulatory parity.

This study has demonstrated that (1) the services and products at issue are substitutes for each other in the eyes of both providers and consumers, (2) entry into the marketplace is increasingly easy, (3) providers and prospective providers are numerous, and (4) no one firm has a large market share based upon its effective capacity.

This situation conforms with the economic definition of a competitive market structure -- it should not be distorted by the imposition of unnecessary state rate and entry regulations.<sup>97</sup>

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<sup>97</sup>See Besen, "The Cellular Service Industry: Performance and Competition," November 1992, at p.4, n.9 ("Economists call a market structure competitive when entry is easy, firms are numerous, and no firm has a large market share.").